

# Figure 1

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for  
Instant Copy of Data  
Page 1 of 30

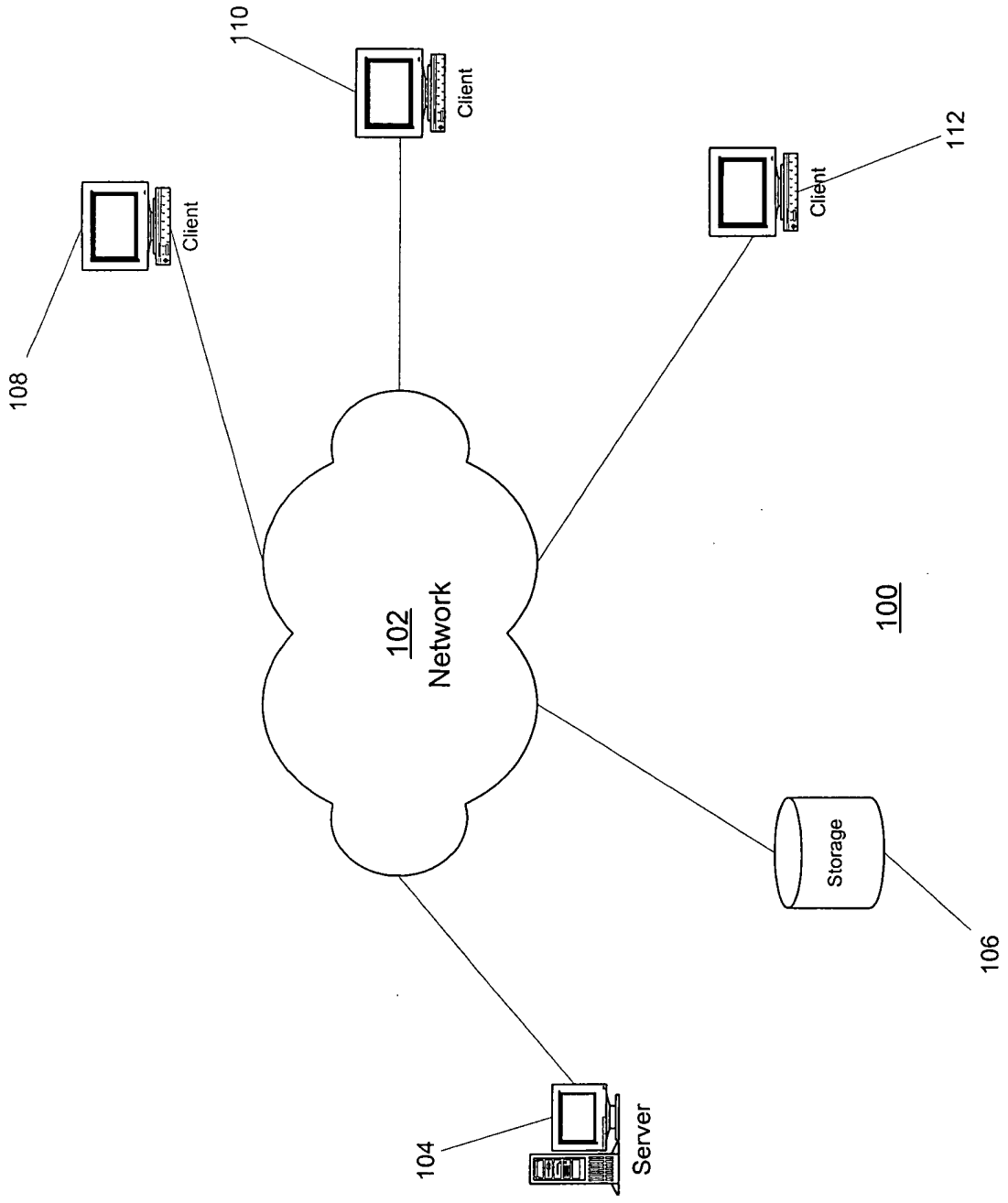
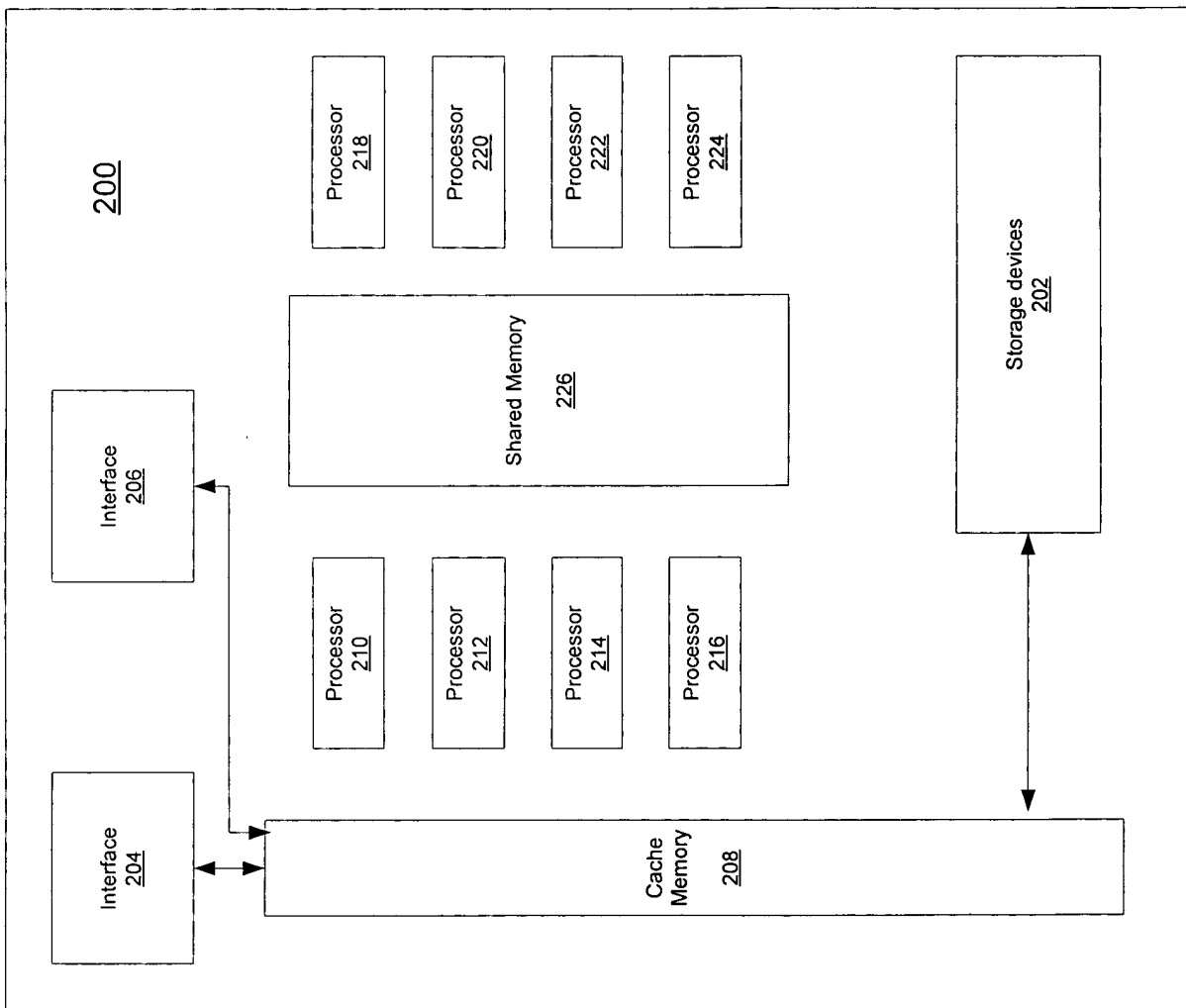


Figure 2

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for  
Instant Copy of Data  
Page 2 of 30



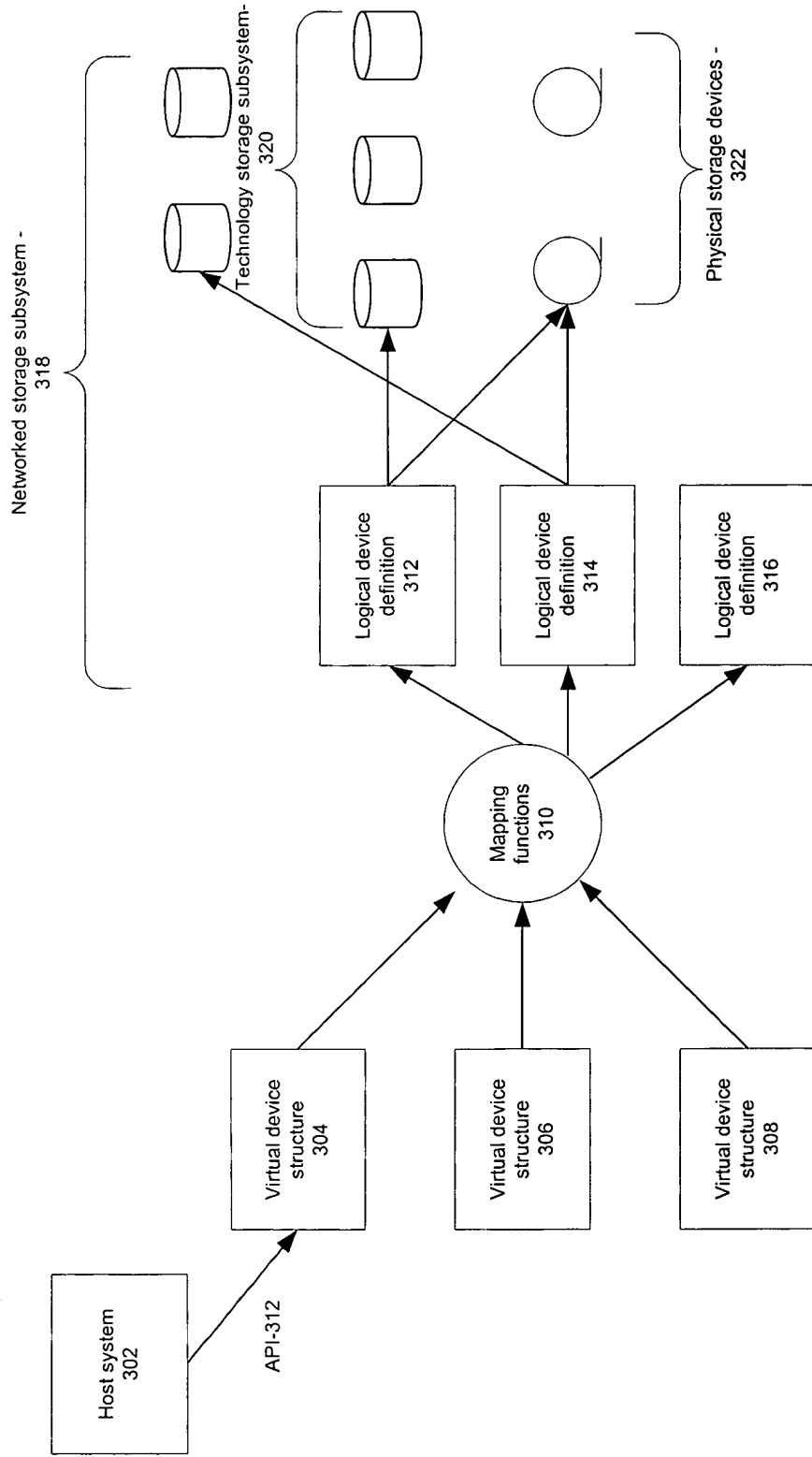


Figure 3

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for  
Instant Copy of Data  
Page 3 of 30

402

RAID stripe group A

Data - records  $n_j$  through  $n_k$ ; records  $n_{y+1}$  through  $n_z$

404

RAID stripe group B

Data - records  $n_{k+1}$  through  $n_x$ ; records ...

406

RAID stripe group C

Data - records  $n_{x+1}$  through  $n_y$ ; records .....

Figure 4

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for  
Instant Copy of Data  
Page 4 of 30

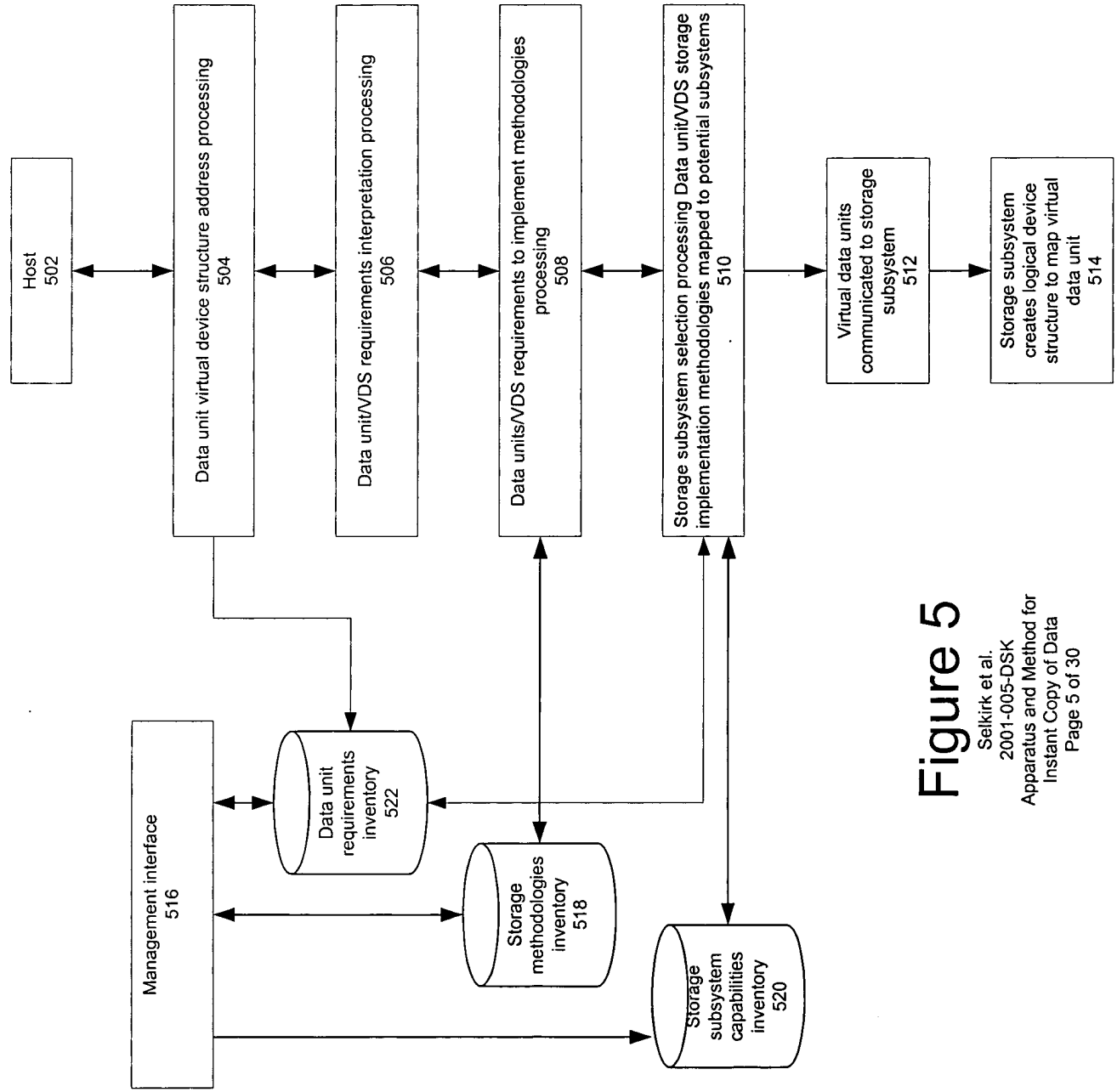


Figure 5

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for  
Instant Copy of Data  
Page 5 of 30

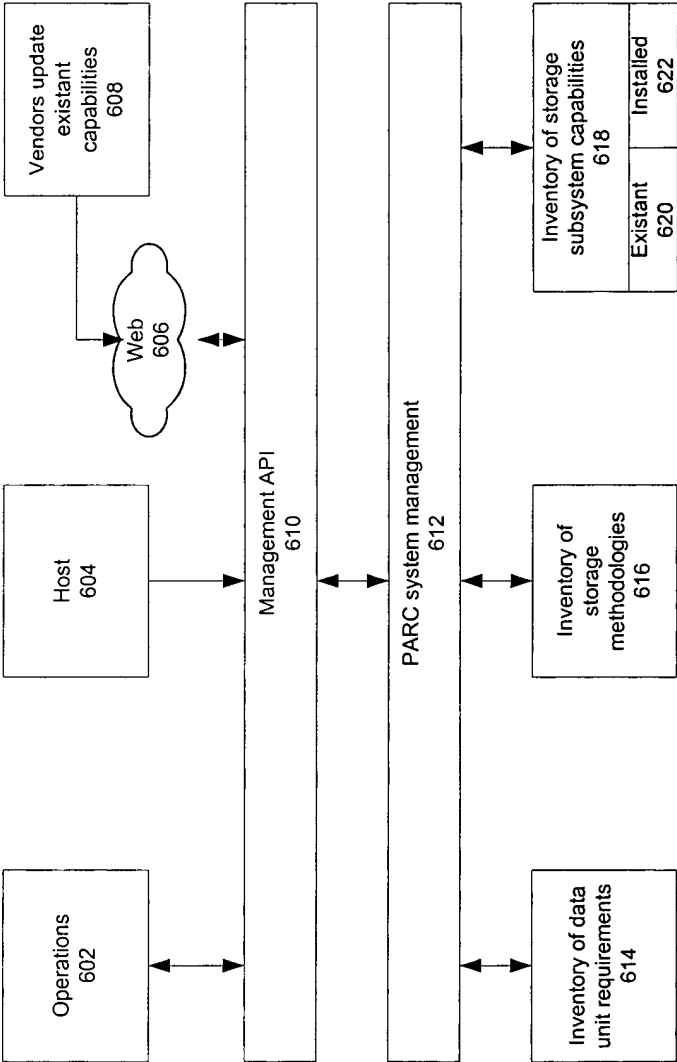


Figure 6

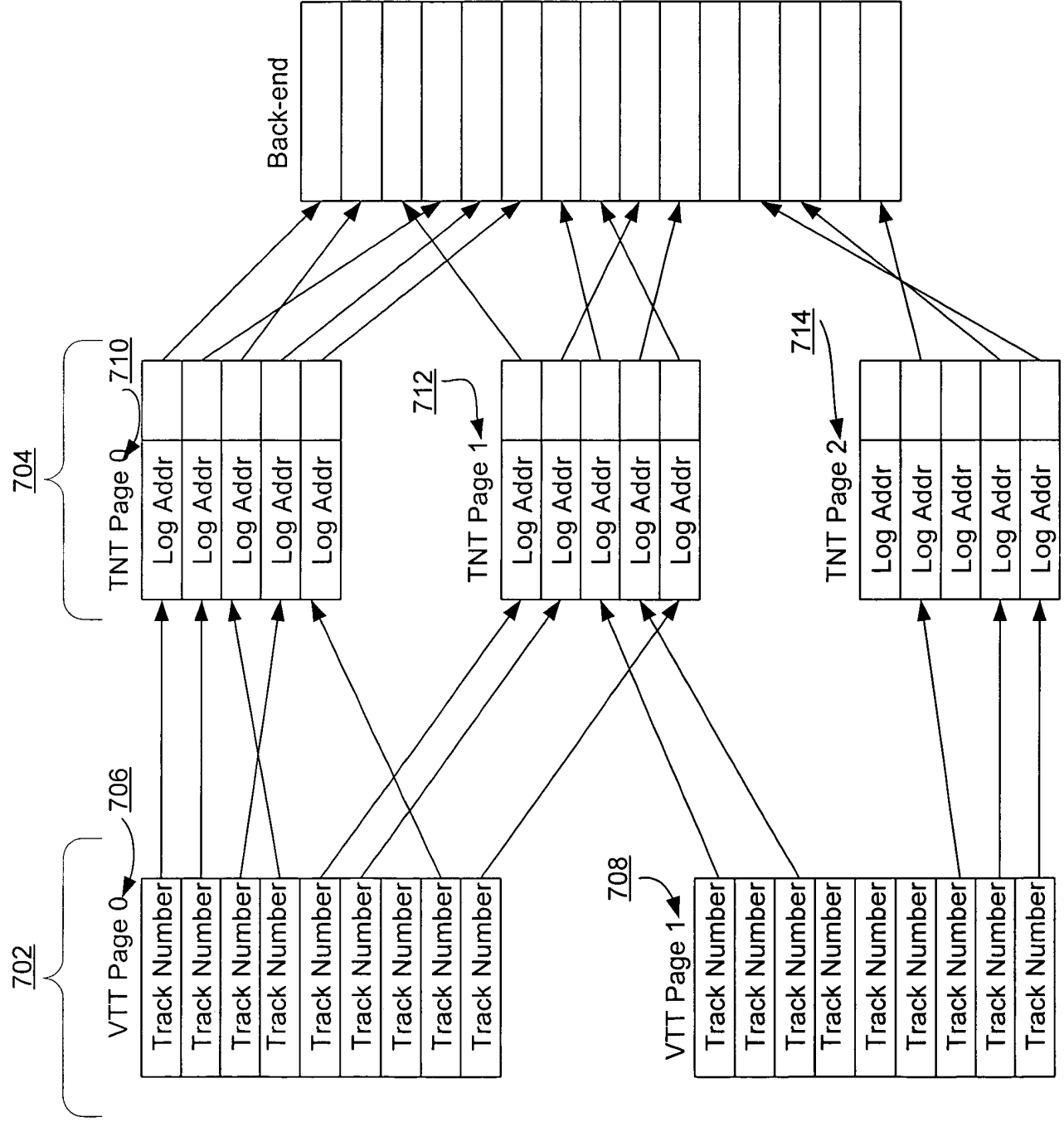


Figure 7

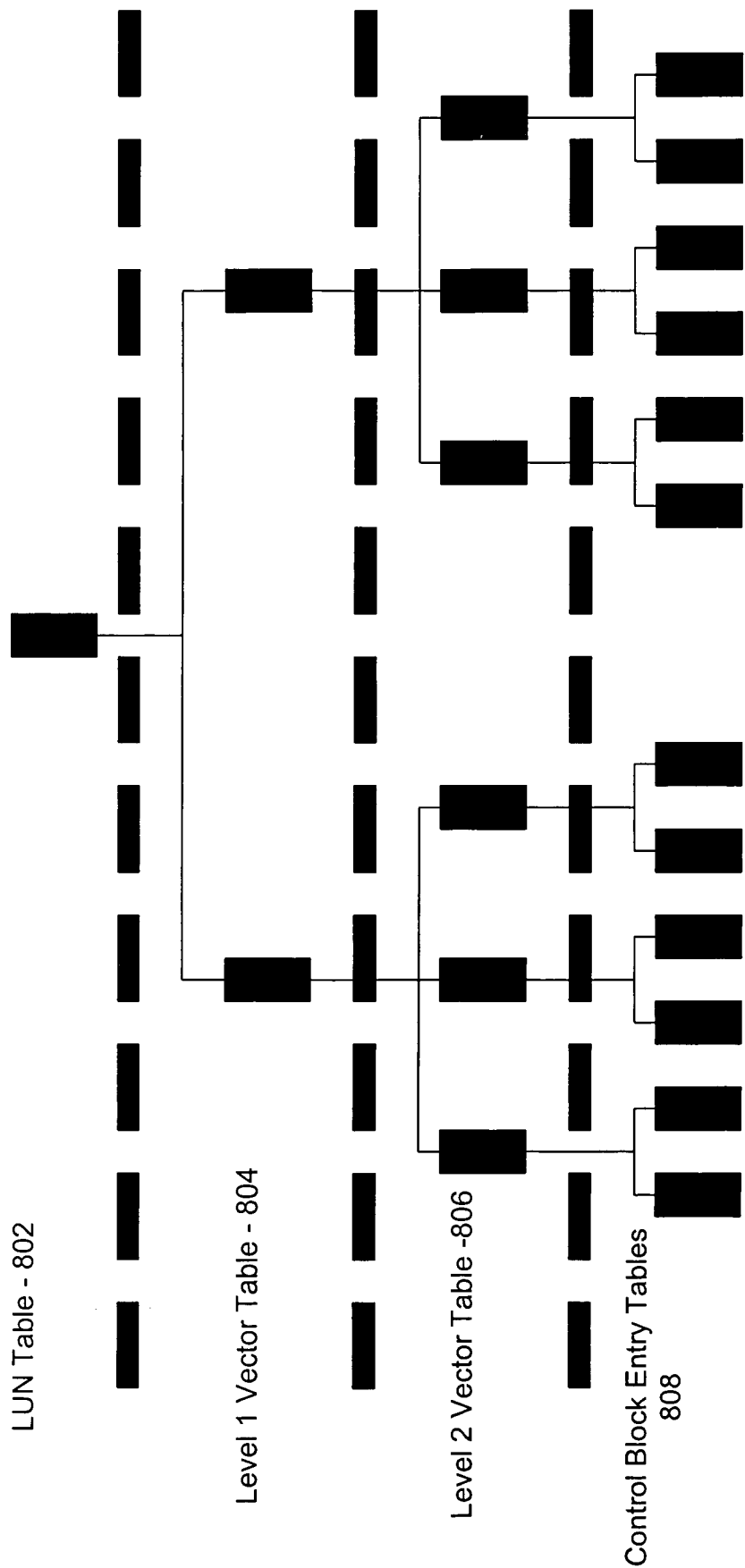


Figure 8



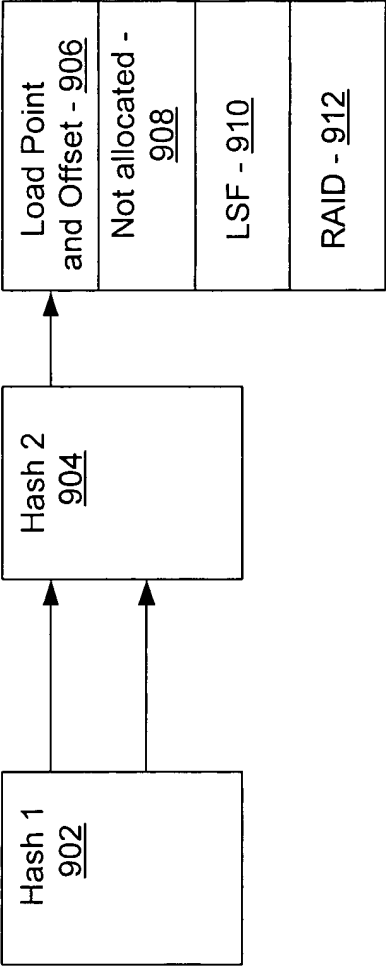


Figure 9  
Selkirk et al.  
2001-005-DSK  
Apparatus and Method for  
Instant Copy of Data  
Page 9 of 30

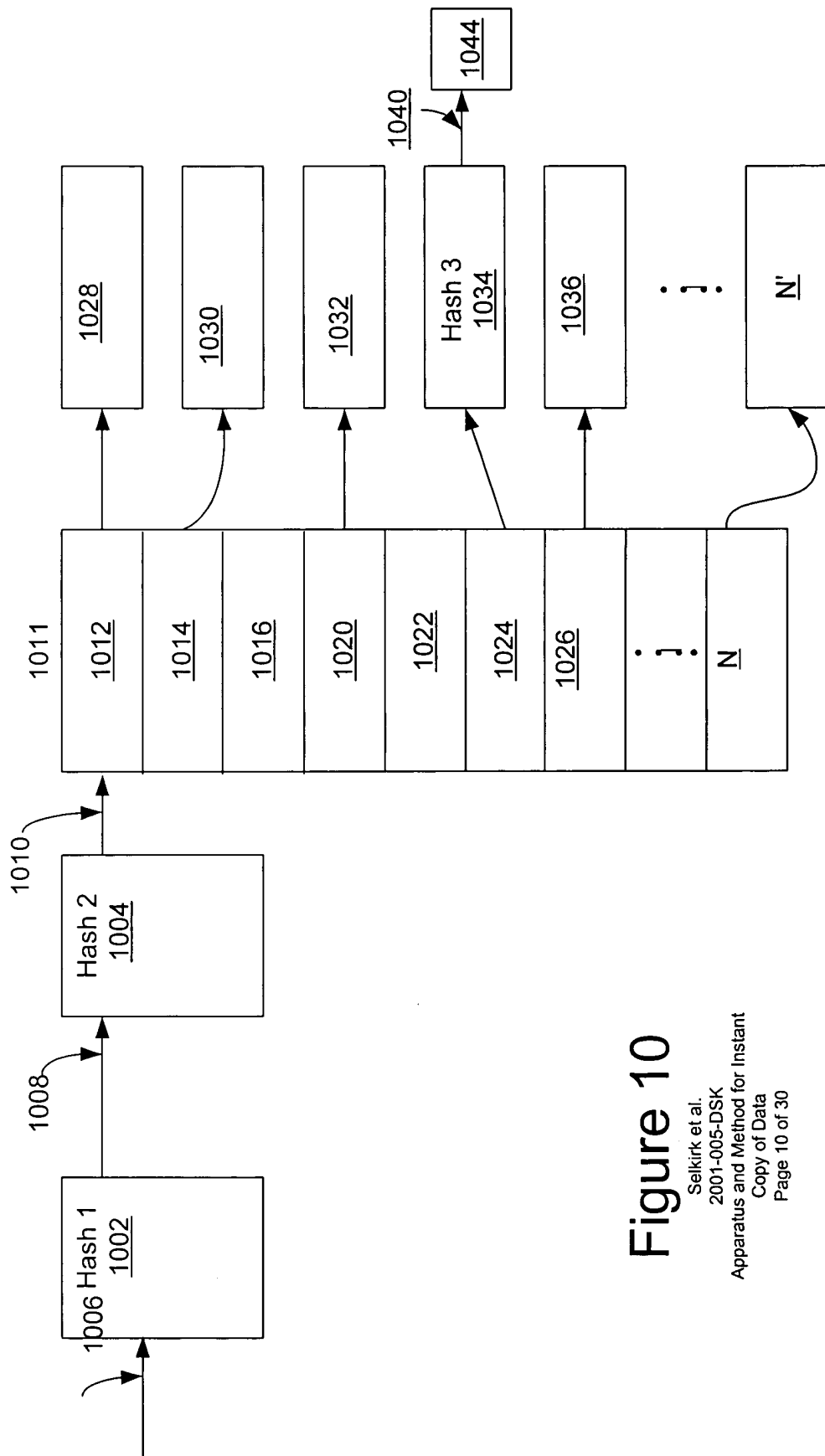


Figure 10

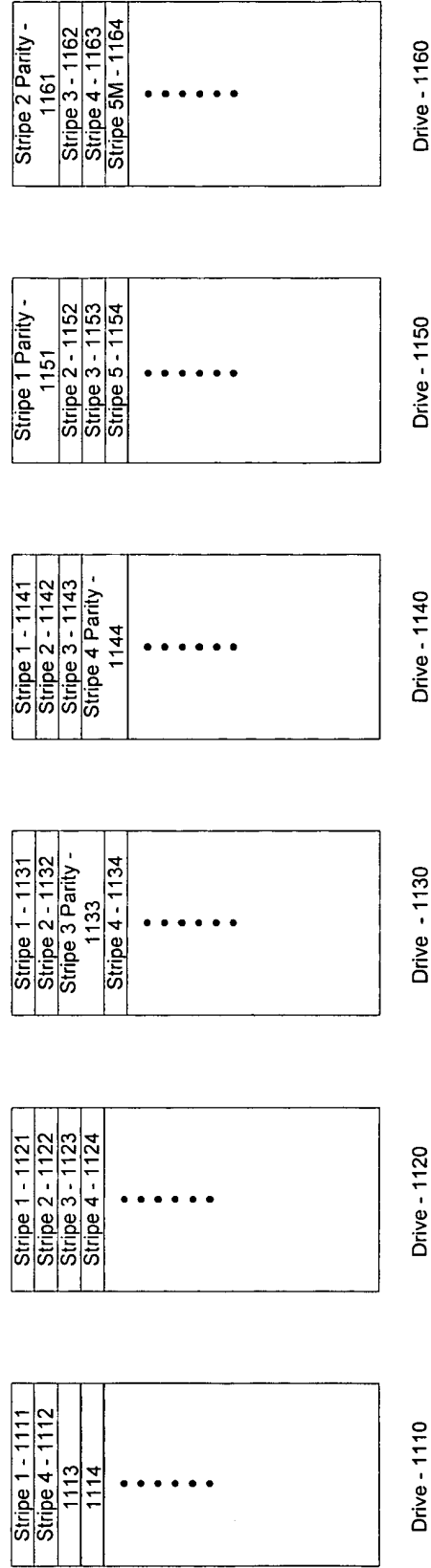


Figure 11

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for Instant  
Copy of Data  
Page 11 of 30

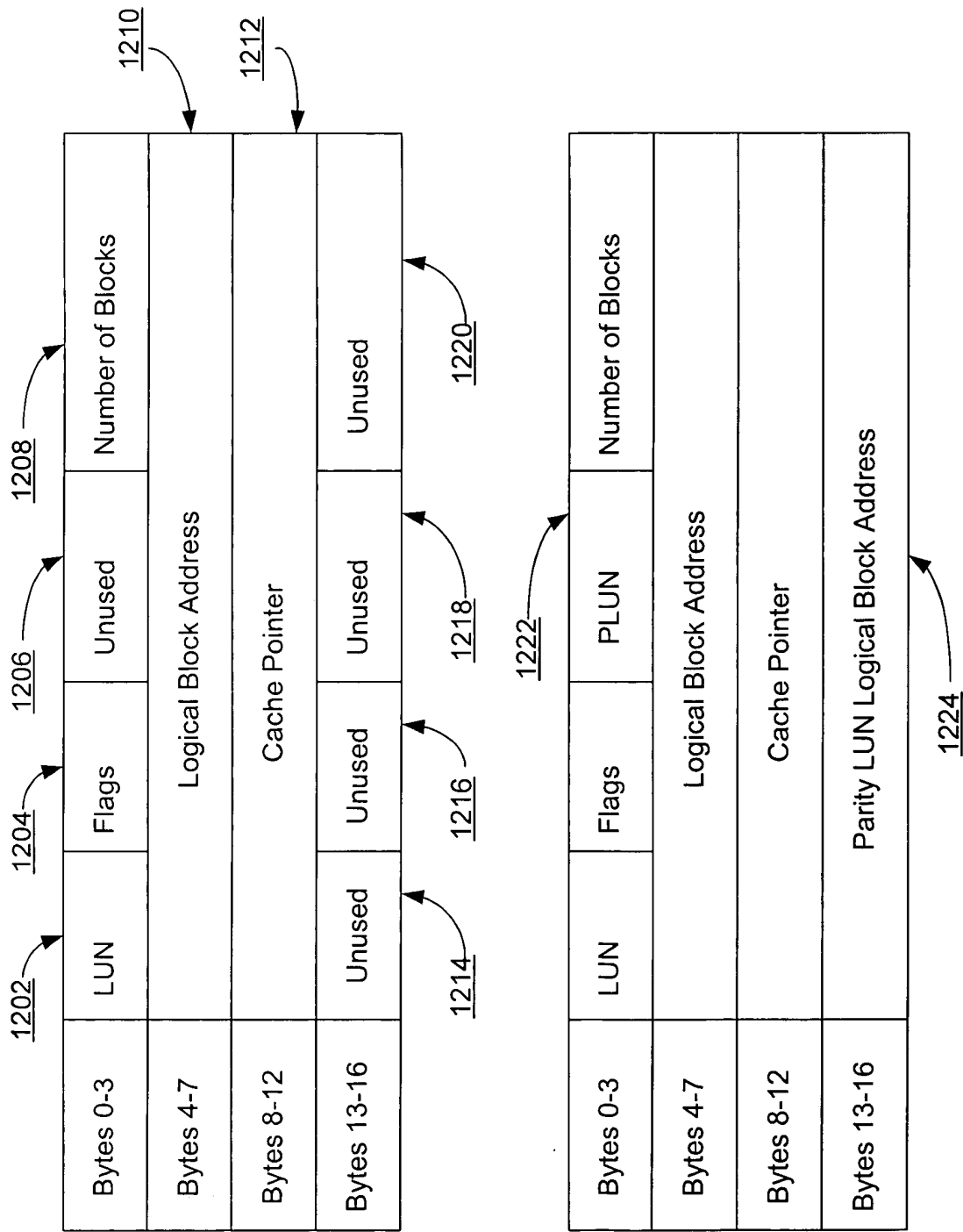


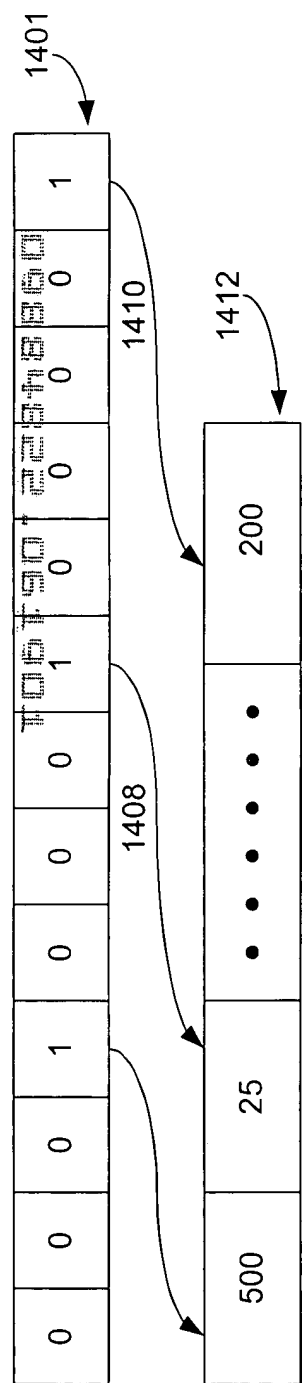
Figure 12

Timestamp			
LBA of previous stripe			
Previous stripe LUN	Index of parity drive	RAID type of stripe	# of strips in stripe
Strip size in blocks			
1st LUN in stripe	Active count	# of host pieces in strip	Unused
LBA of data on 1st LUN			
2nd LUN in stripe	Active count	# of host pieces in strip	Unused
LBA of data on 2nd LUN			
Nth LUN in stripe	Active count	# of host pieces in strip	Unused
LBA of data on Nth LUN			
Host LUN	Length in strip	Host Length	
Host LBA			
Host LUN	Length in strip	Host Length	
Host LBA			

Figure 13

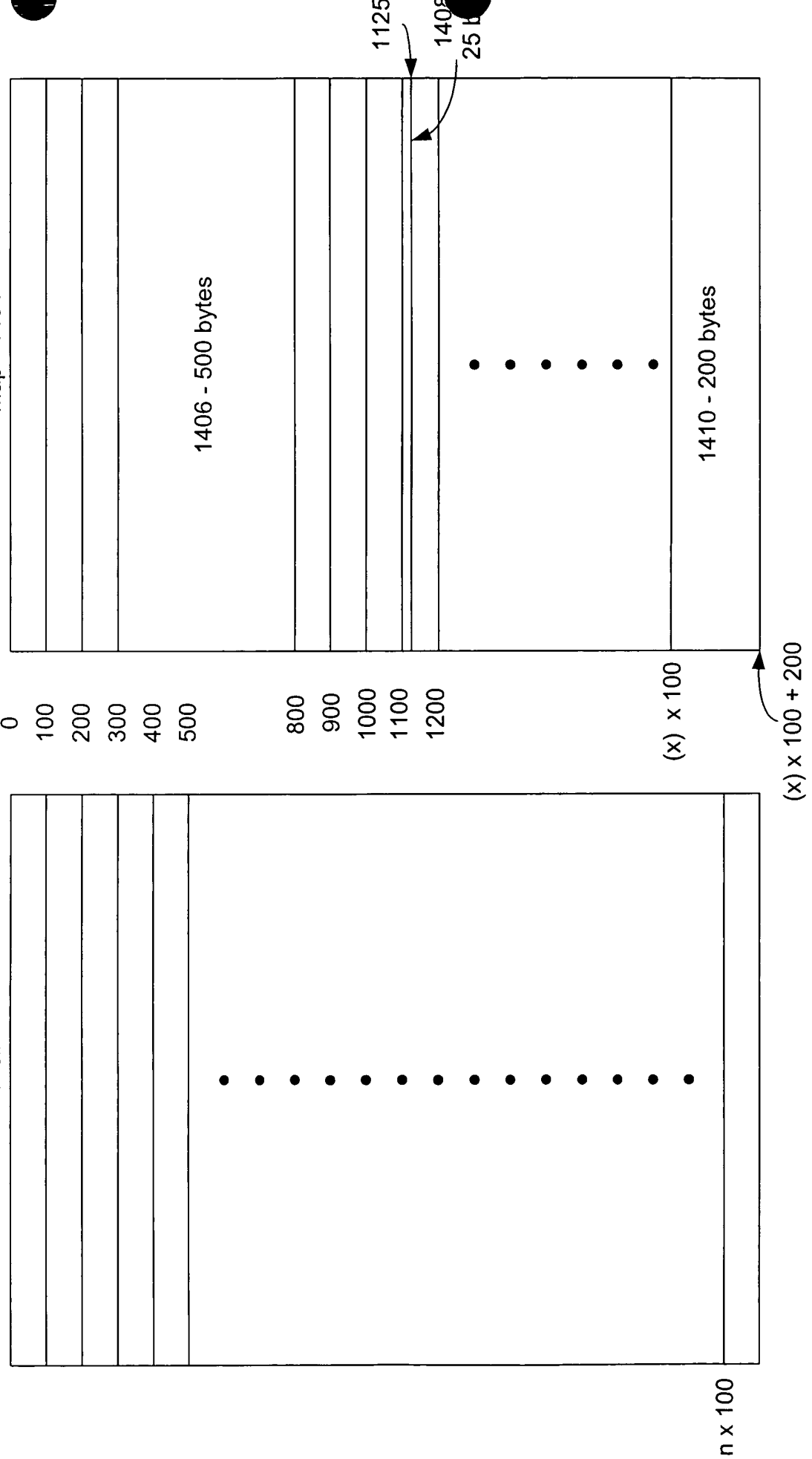
# Figure 14

Seikirk et al.  
2001-005-DSK  
Apparatus and Method for Instant  
Copy of Data  
Page 14 of 30



Implied Storage Allocation  
- 1402

Actual Storage Allocation  
Map - 1404



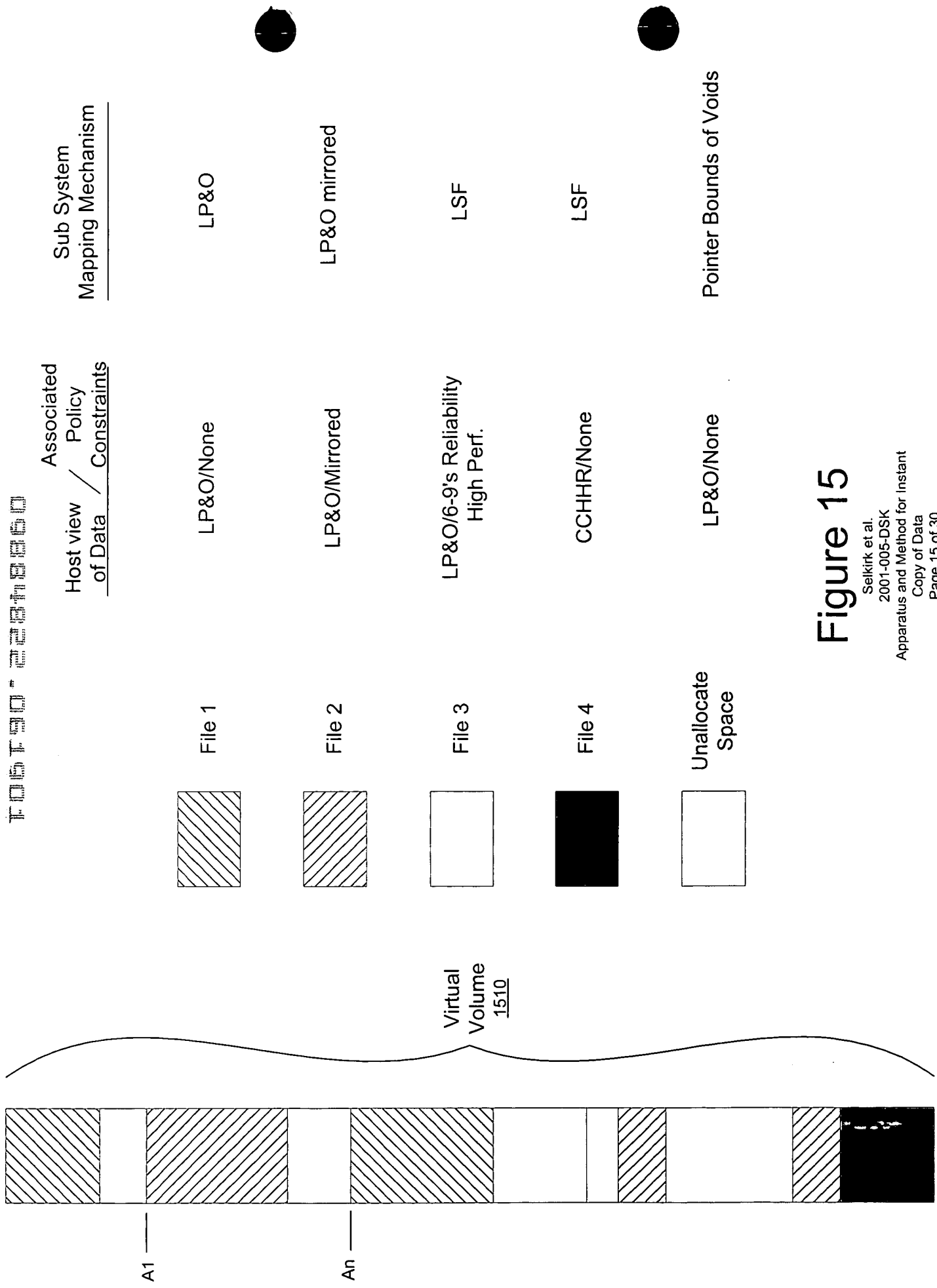
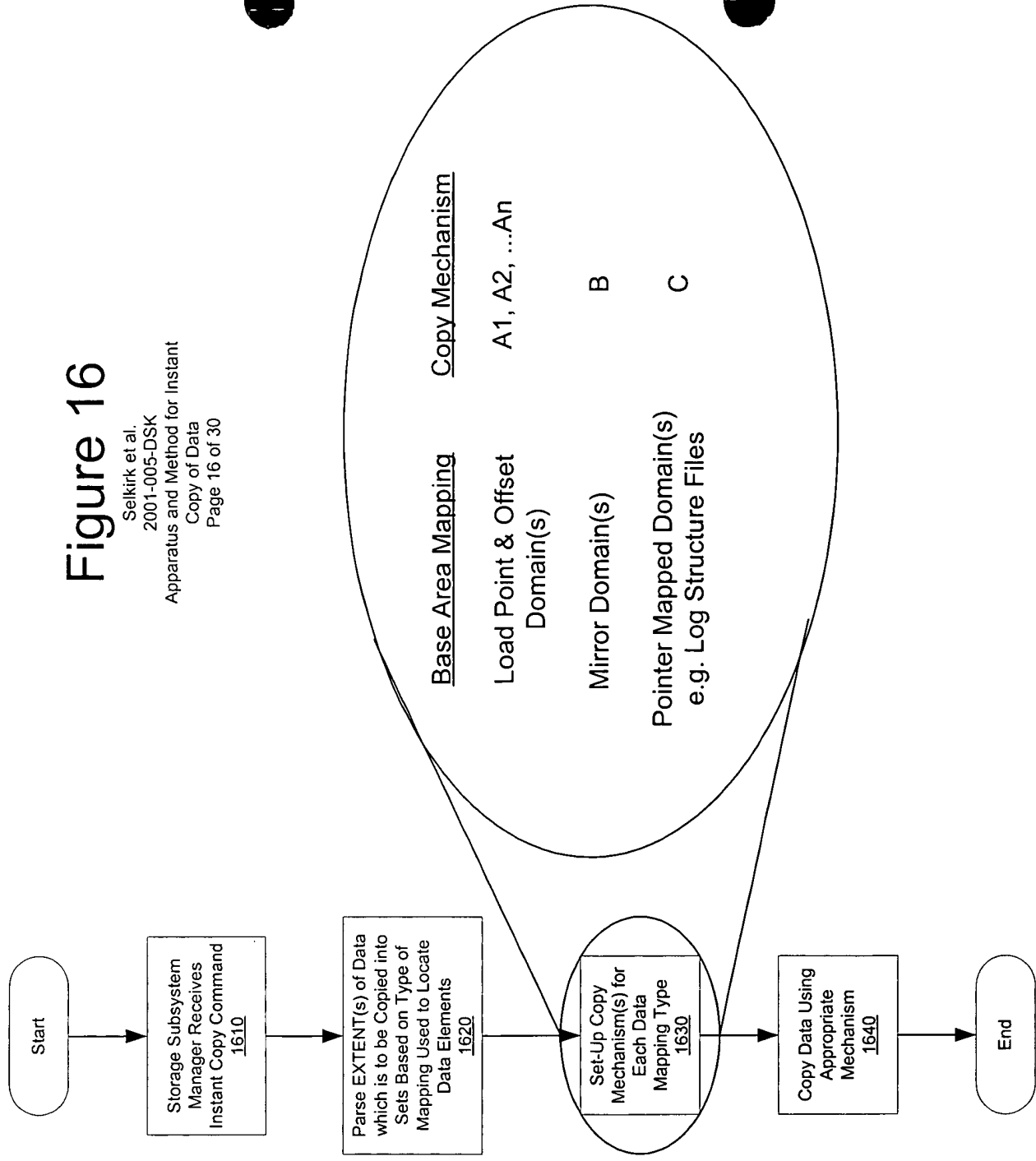


Figure 15

Figure 16

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for Instant  
Copy of Data  
Page 16 of 30





Original Mapping

Instant Copy Meta-Data Type

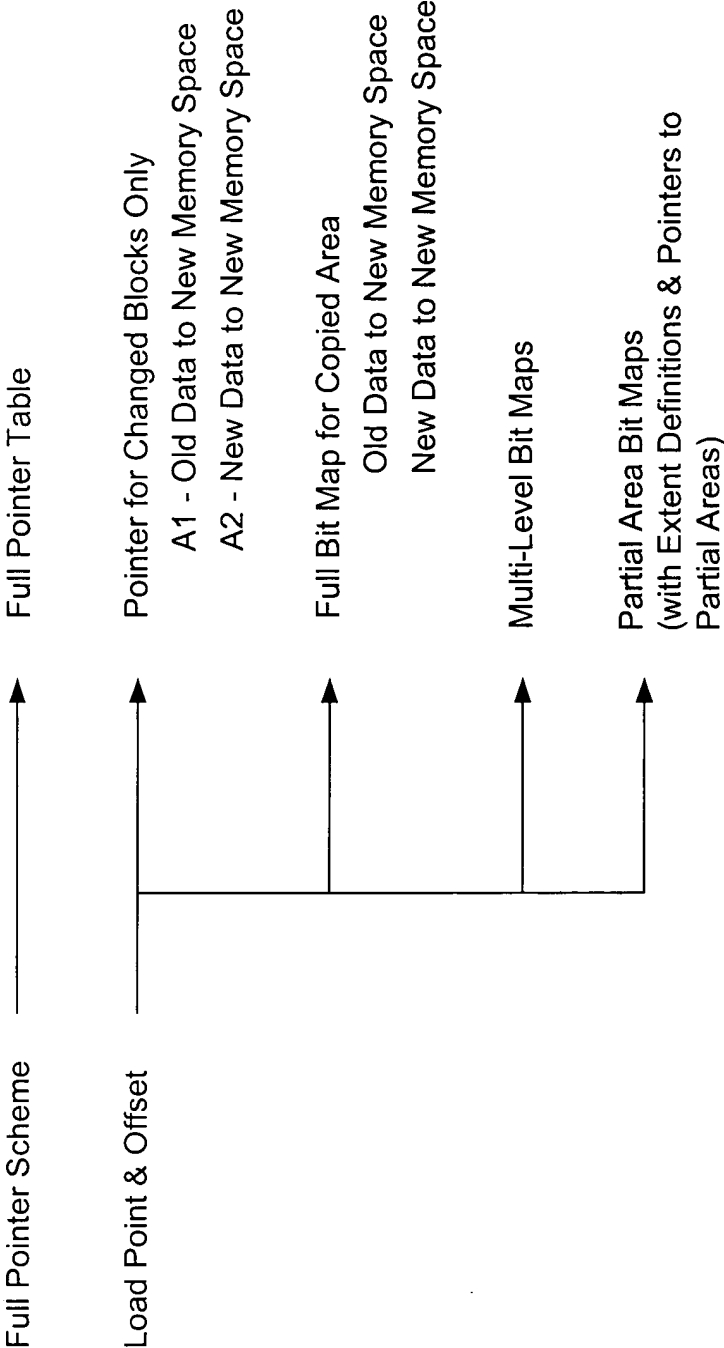


Figure 17

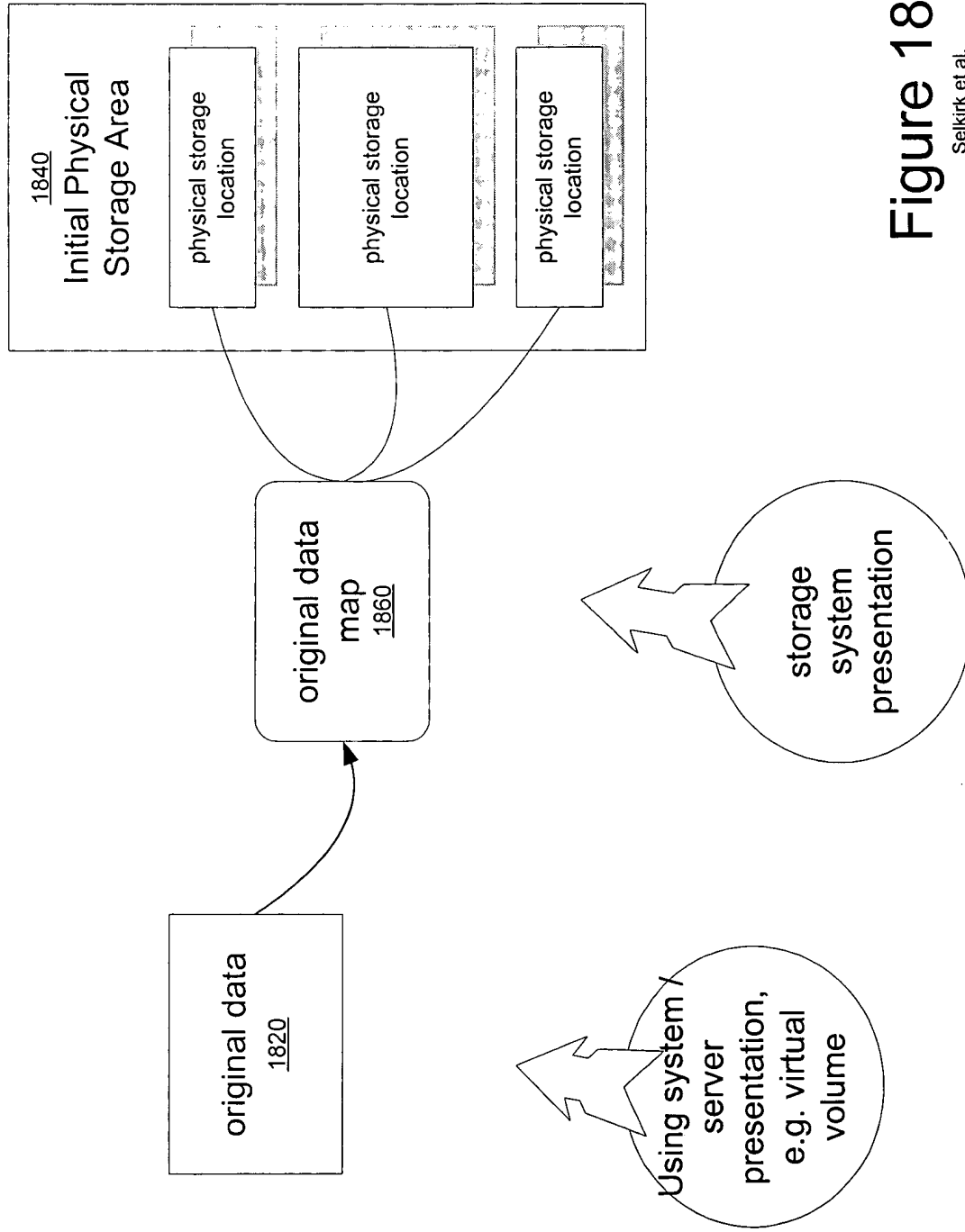


Figure 18A

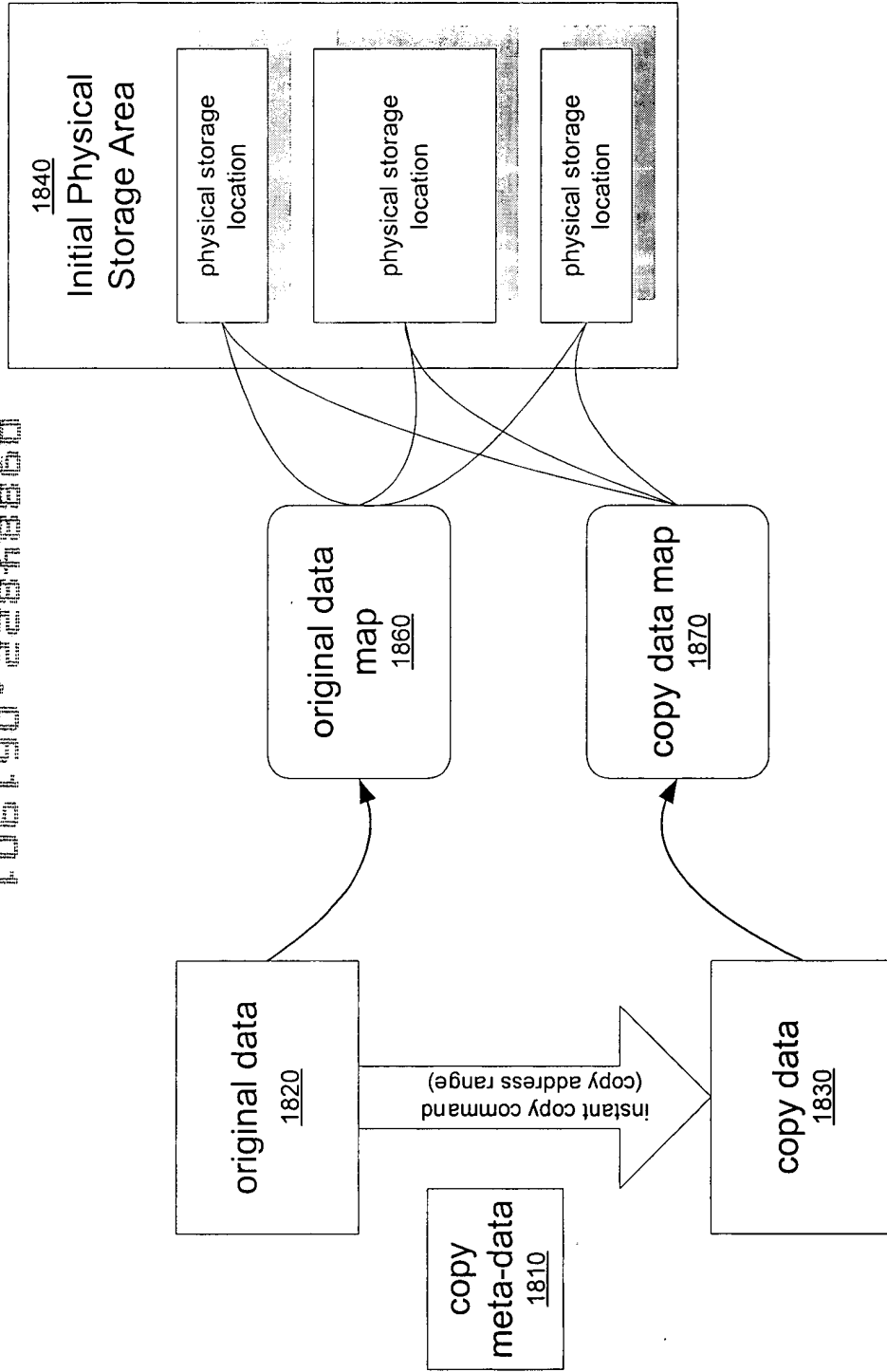


Figure 18B

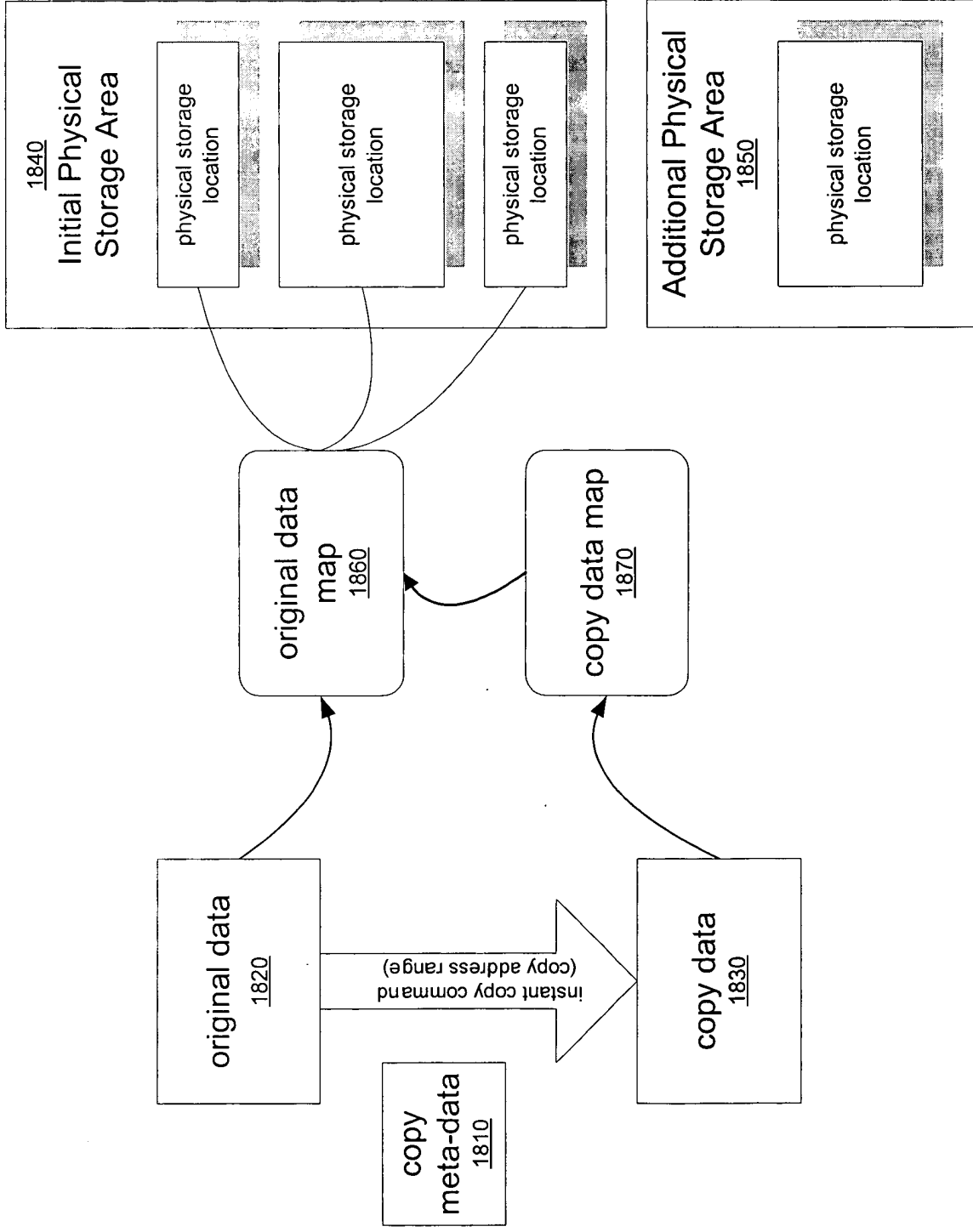


Figure 18C

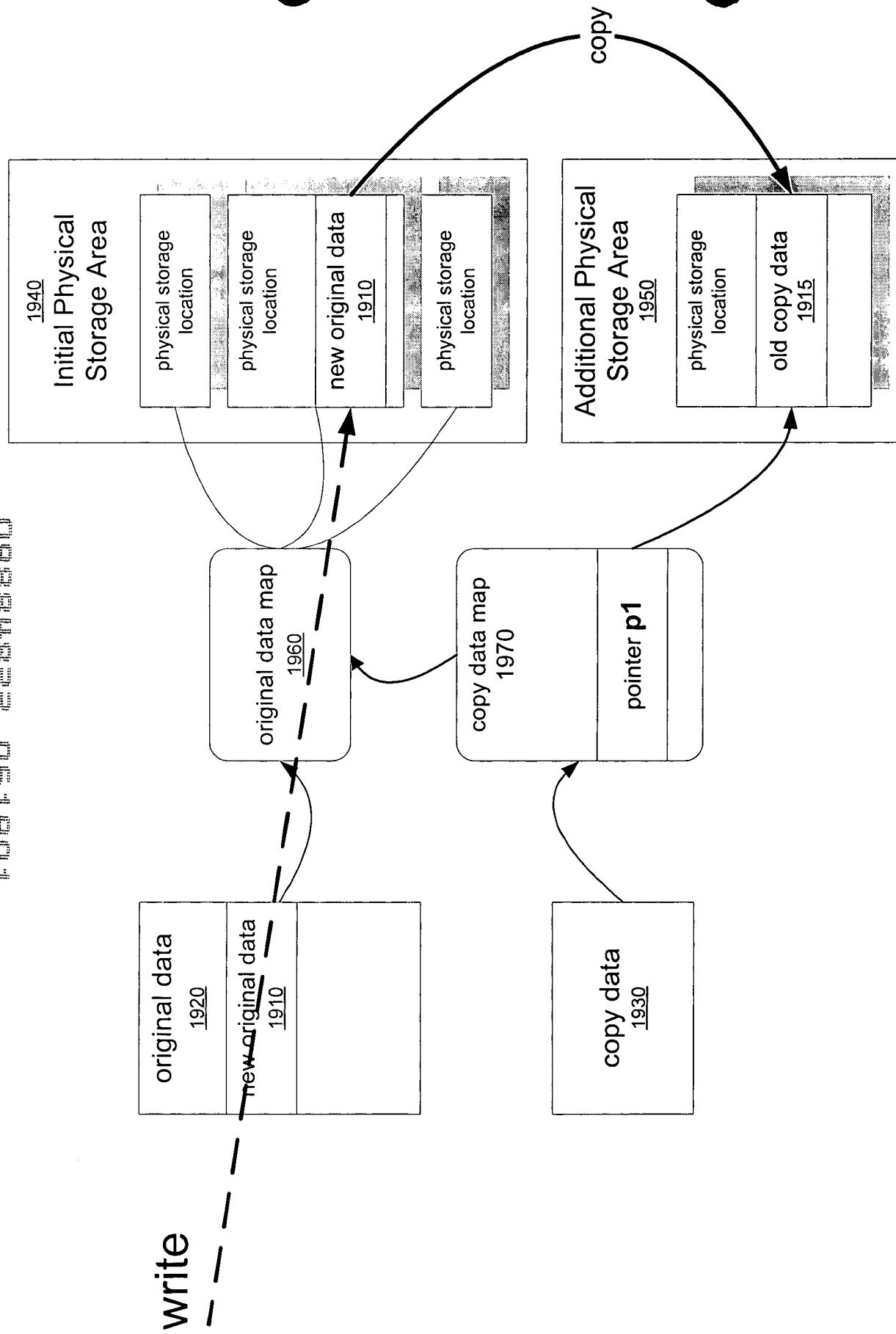


Figure 19

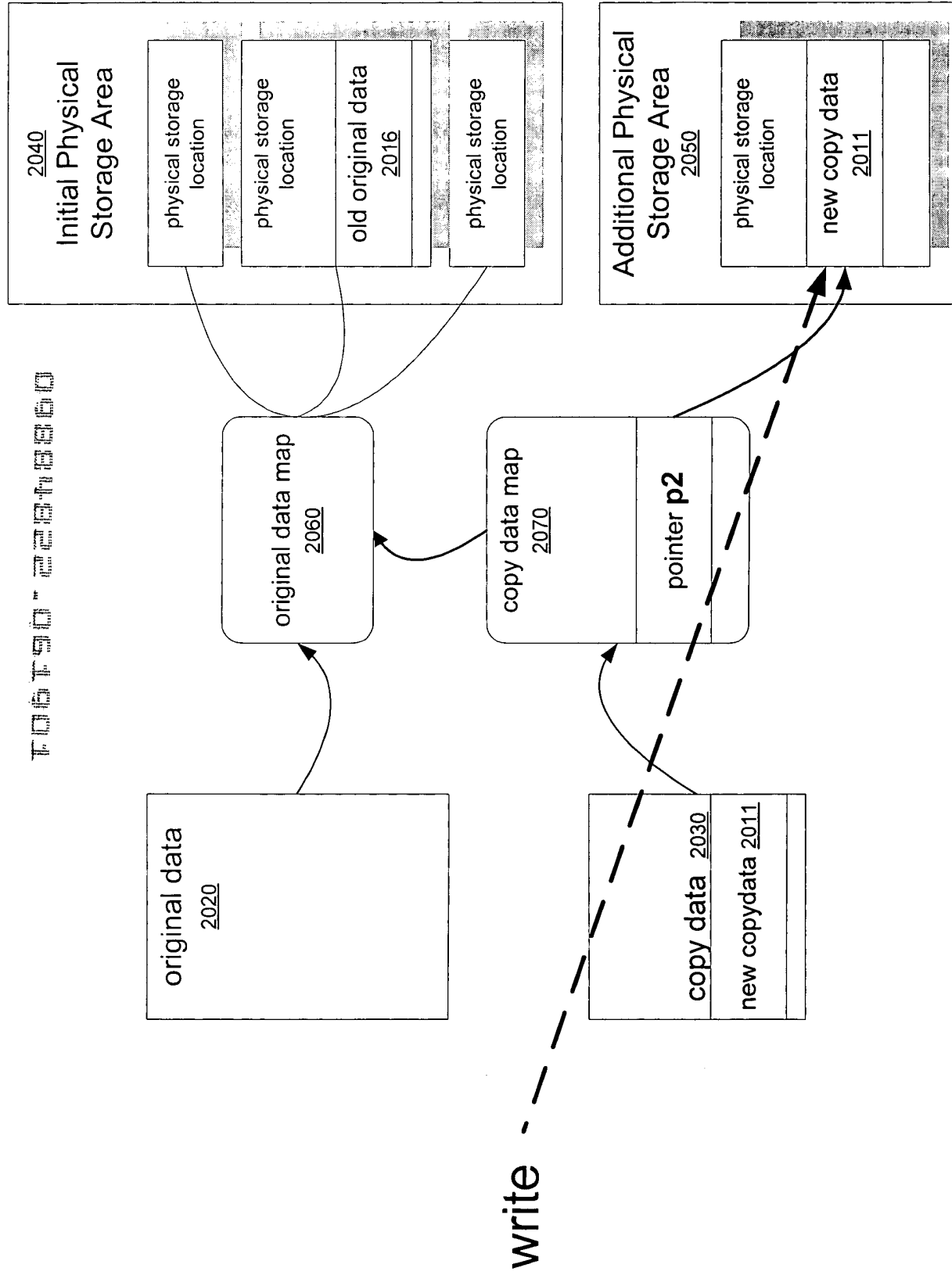


Figure 20A

write

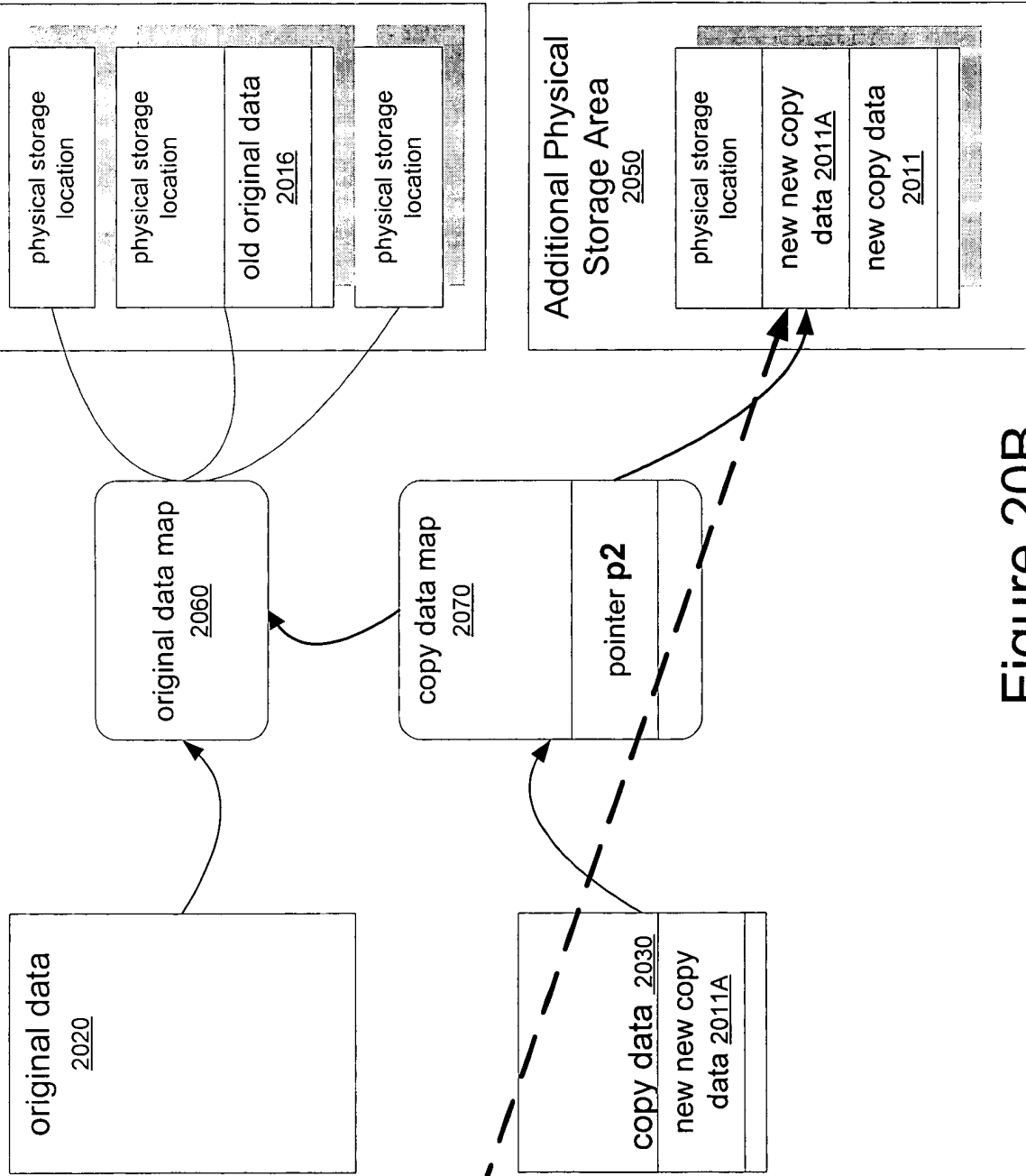


Figure 20B

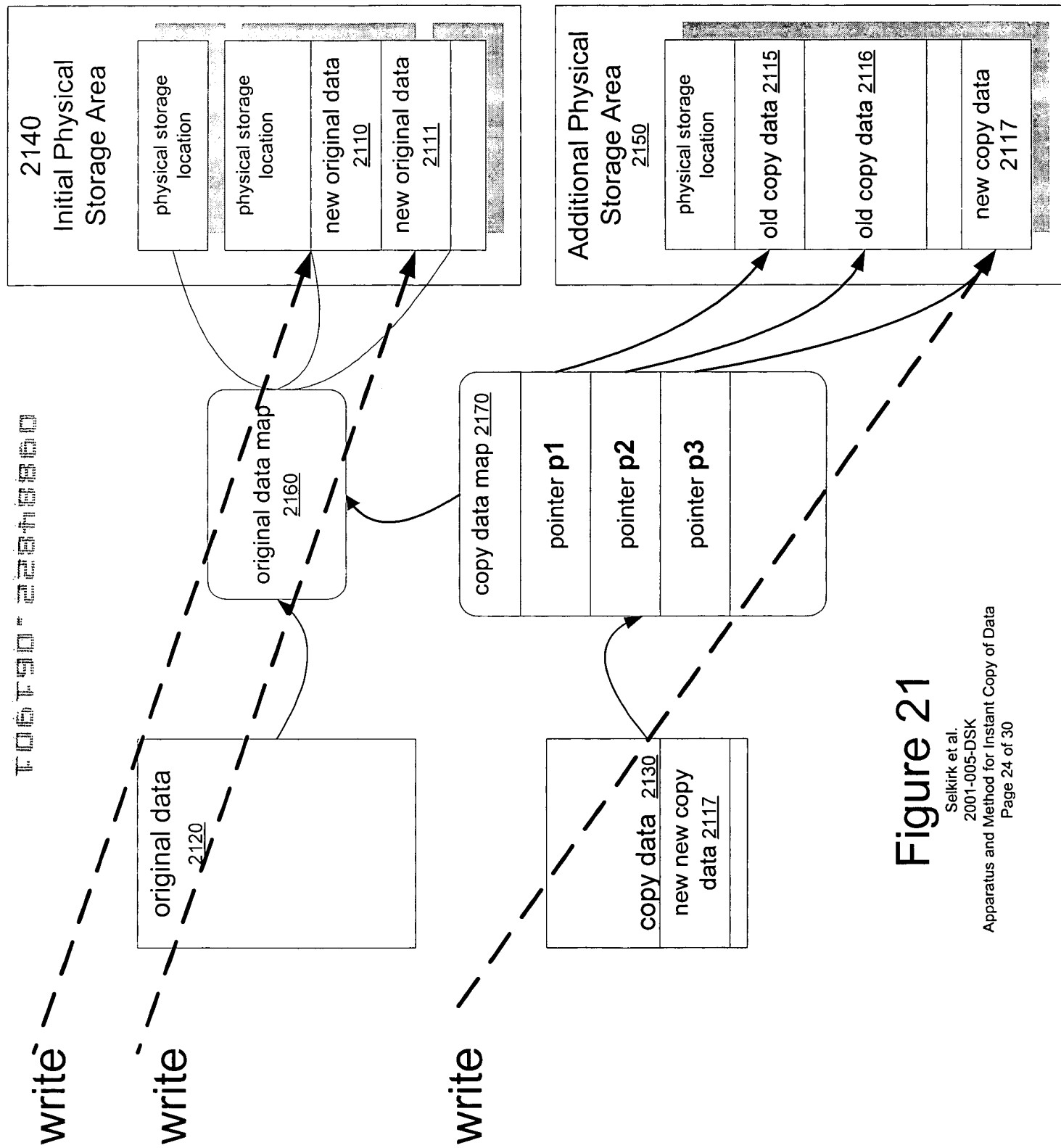


Figure 21



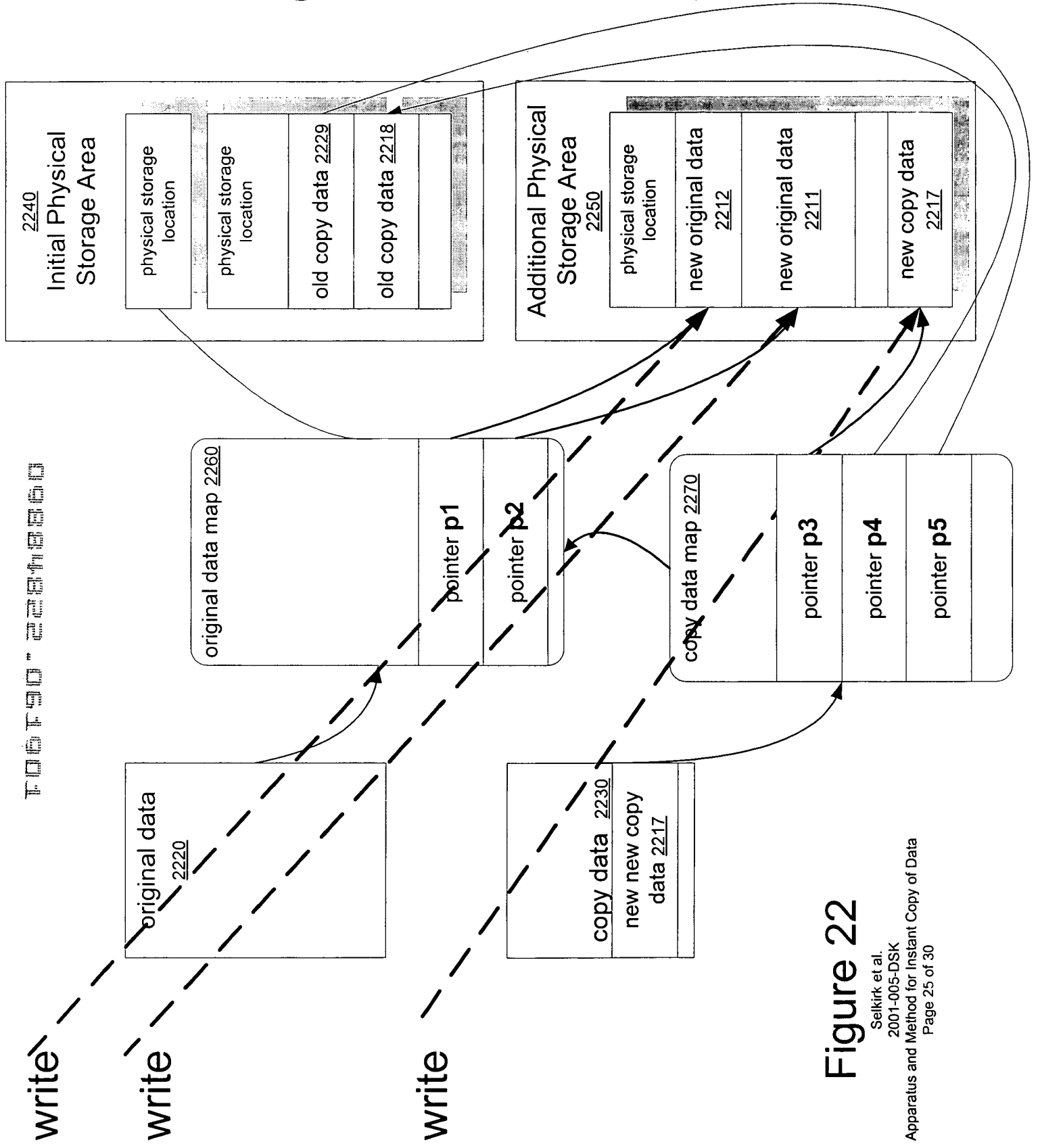


Figure 22

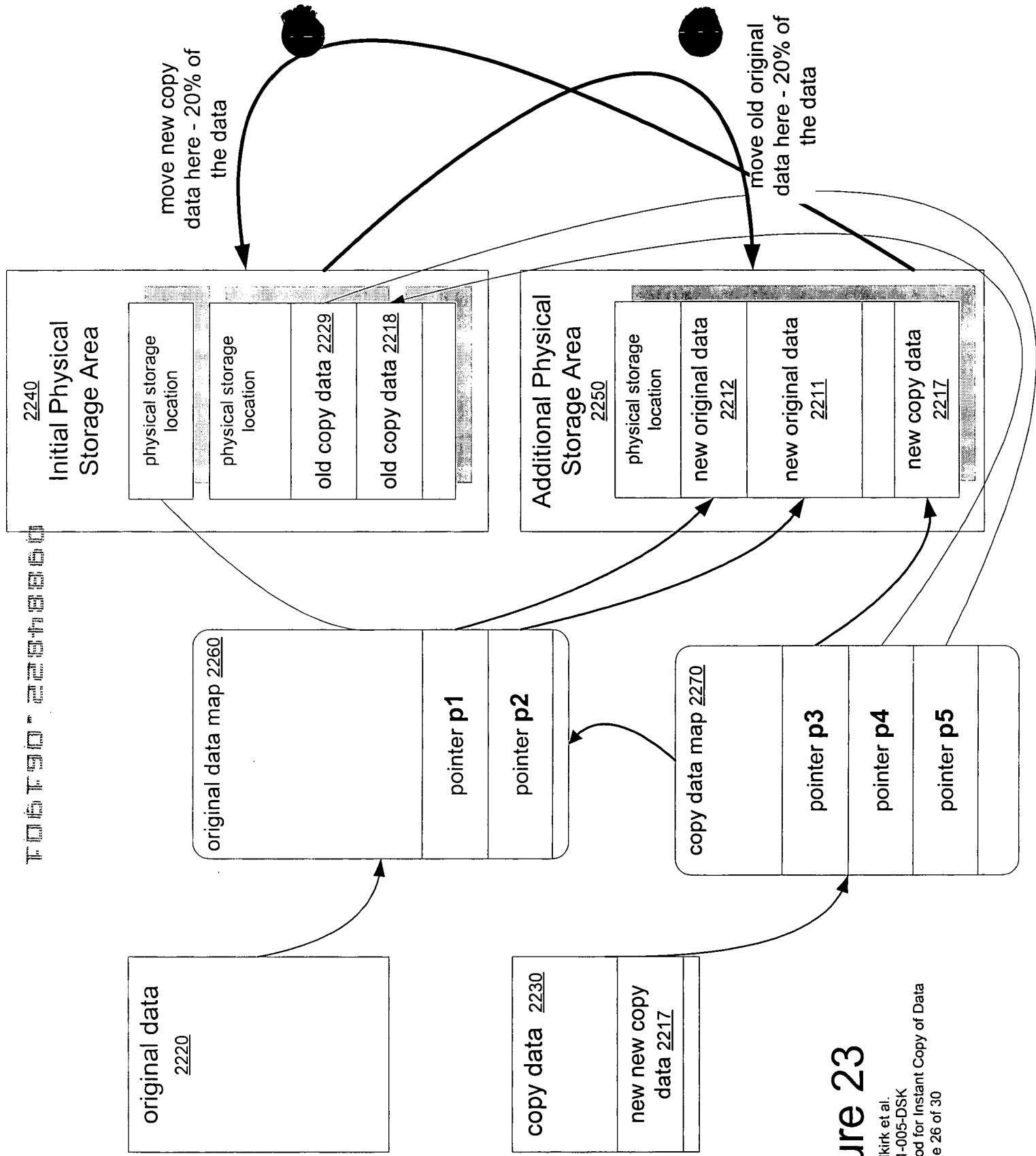


Figure 23

Figure 24A

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for Instant Copy of Data  
Page 27 of 30

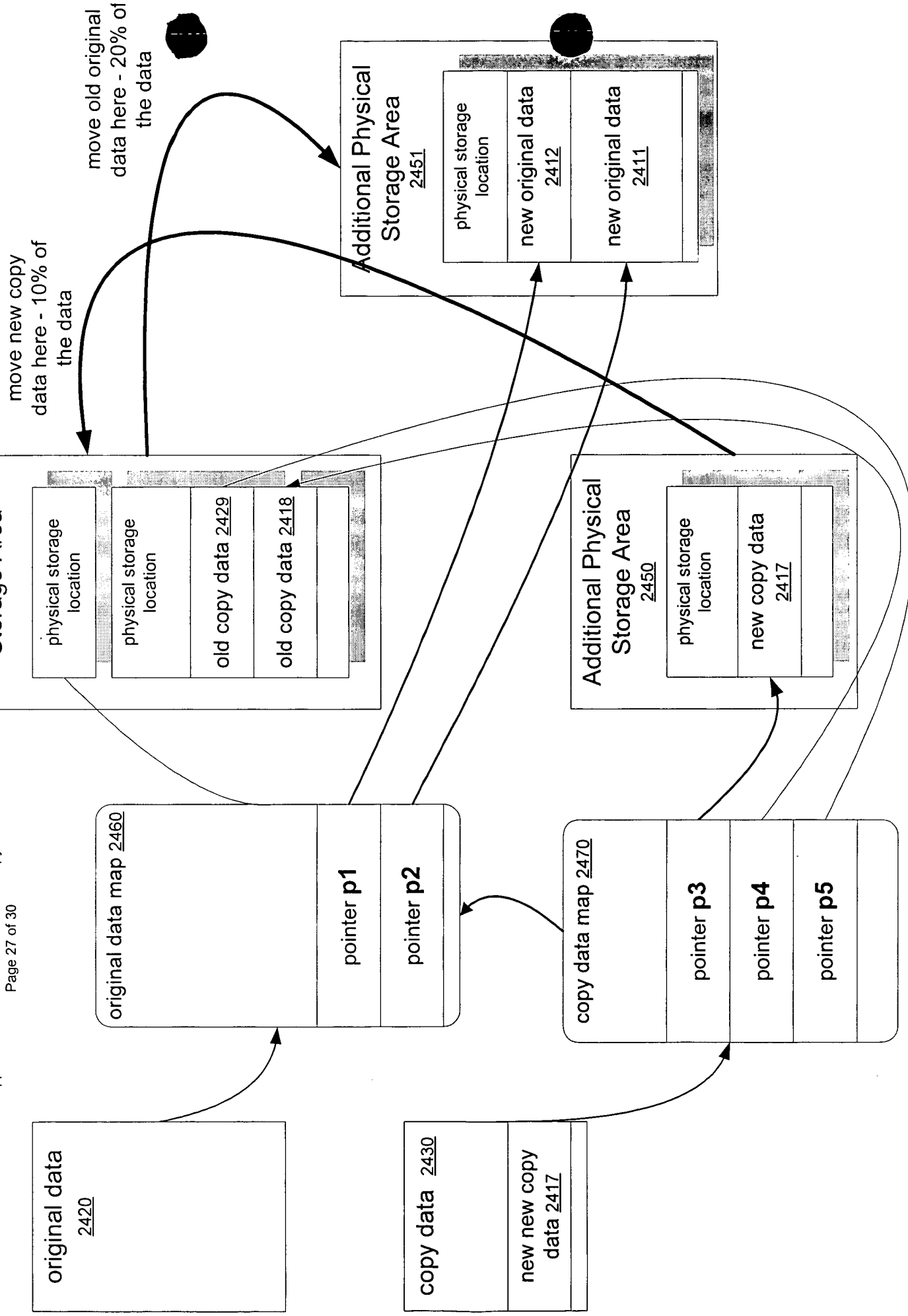
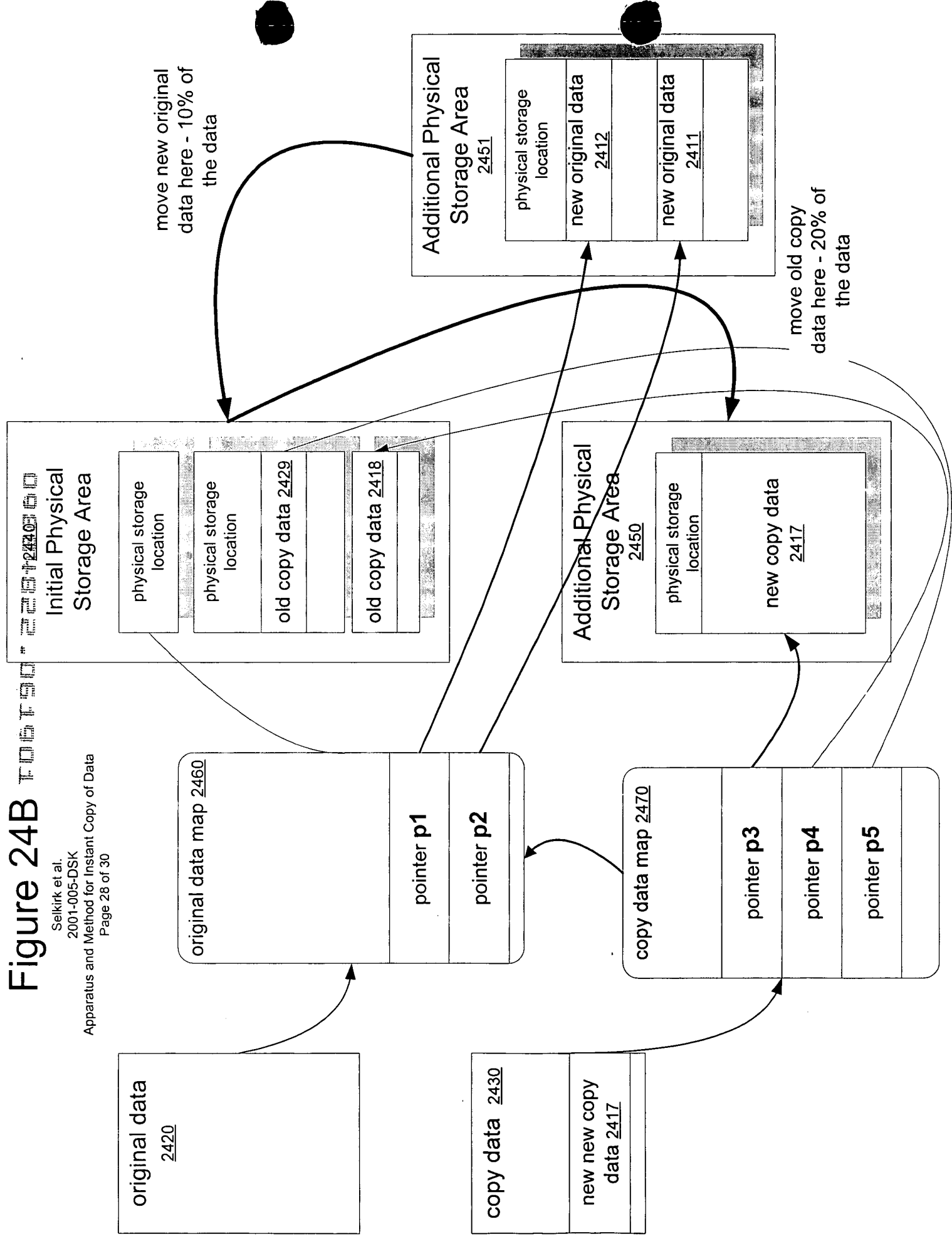


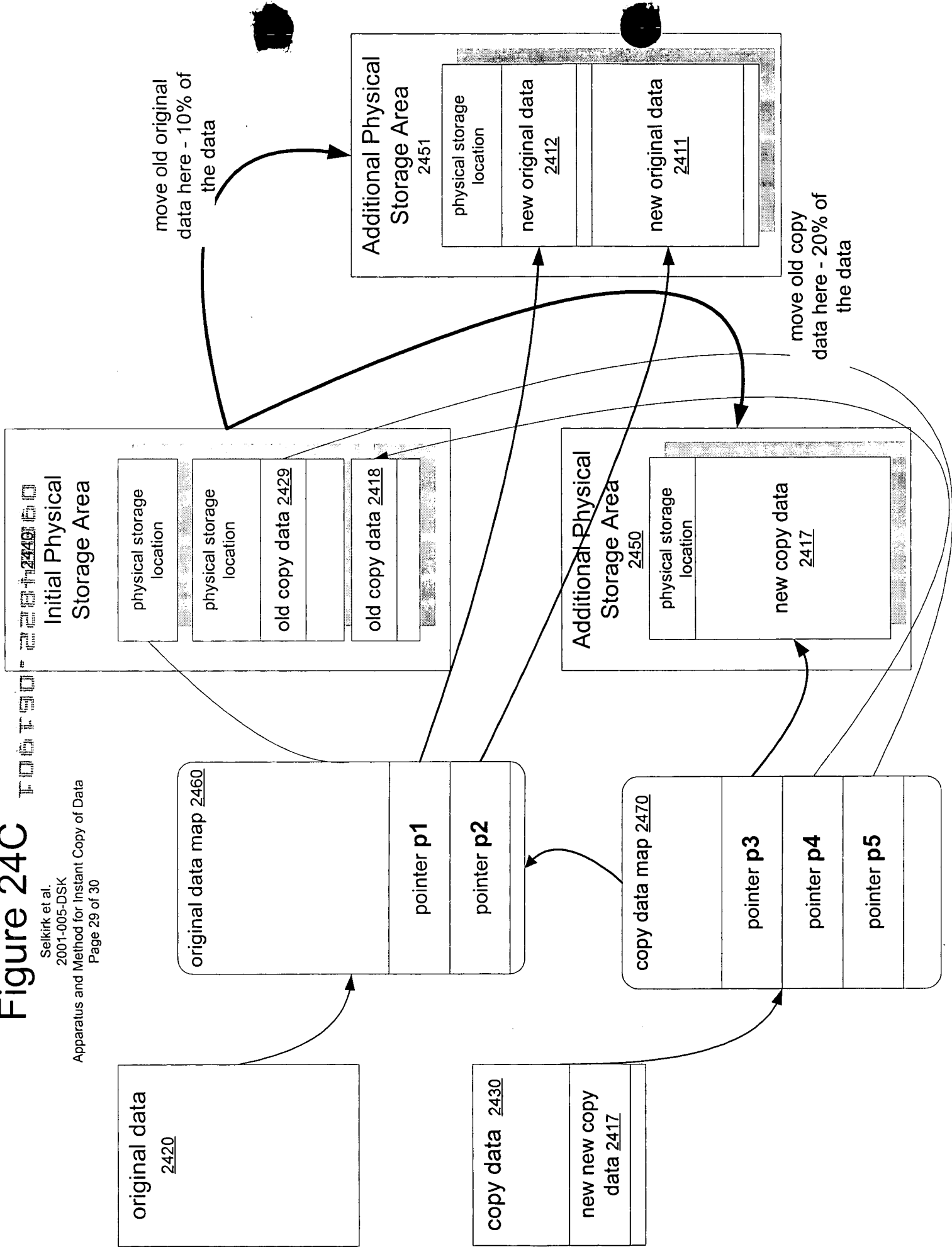
Figure 24B

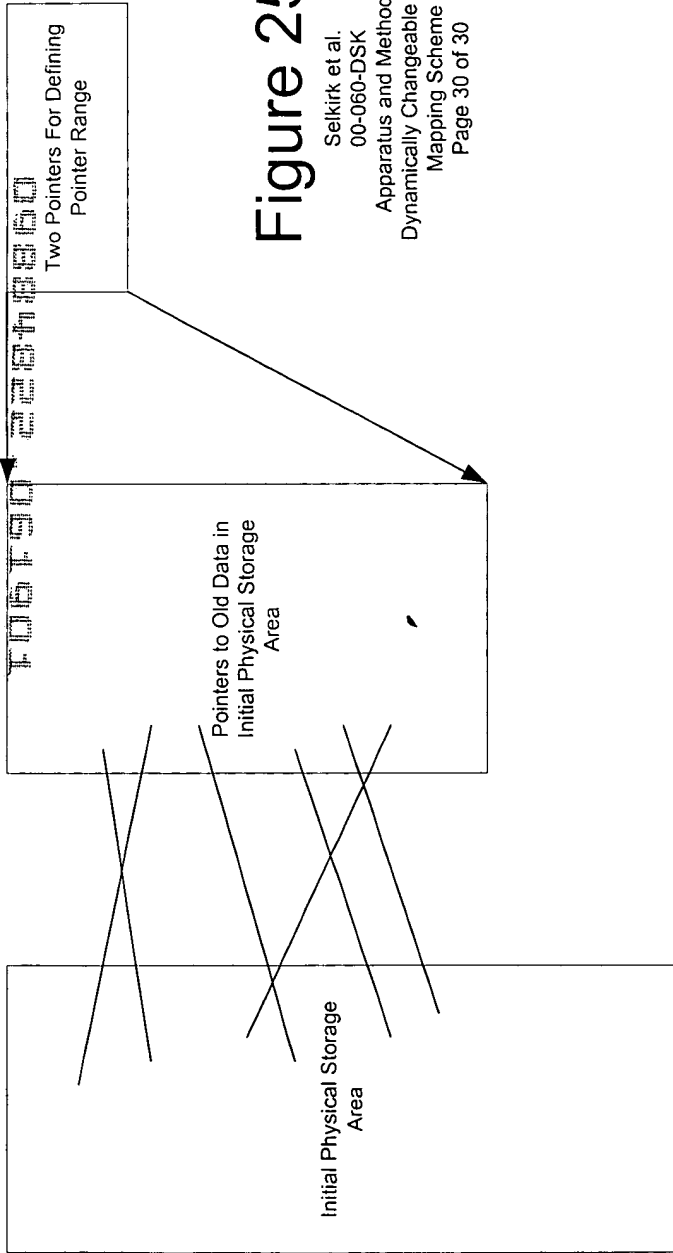
Selkirk et al.  
2001-005-DSK  
Apparatus and Method for Instant Copy of Data  
Page 28 of 30



# Figure 24C

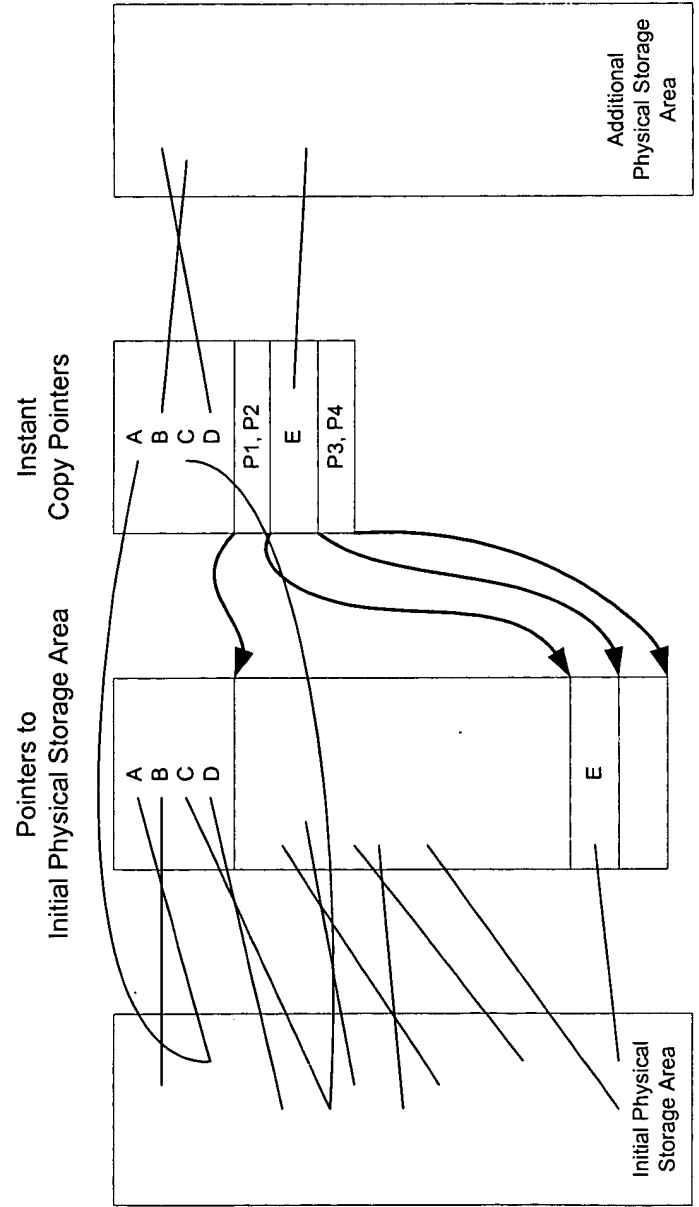
Selkirk et al.  
2001-005-DSK  
Apparatus and Method for Instant Copy of Data  
Page 29 of 30





**Figure 25A**

Selkirk et al.  
00-060-DSK  
Apparatus and Method for  
Dynamically Changeable Virtual  
Mapping Scheme  
Page 30 of 30



**Figure 25B**

Selkirk et al.  
2001-005-DSK  
Apparatus and Method for Instant  
Copy of Data  
Page 30 of 30